



Product Prioritization for Standards & Labeling Programs

An Introduction to Product and
Policy Analysis (PPAT) Tool

Eric Gibbs
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Need for Product Prioritization



PPAT Introduction

- Product Prioritization and Analysis Tool (PPAT) was developed to inform strategic decisions about which products to incorporate into standards and labeling program, based on potential energy and cost savings.
- The PPAT generates scenarios based on current and forecasted market data and policy circumstances.



Product and Policy Analysis Tool (PPAT)

- Conduct the national impact analysis
 - Energy saving
 - Greenhouse gas emissions reduction
- Create a roadmap for future policy planning
- Identify next set of products for standards and labeling
- Determine most relevant policy implementation approach
 - Labels or Standards or Both
 - Mandatory or Voluntary
 - Comparative or Endorsement



Input Parameters

1. Quantitative Parameters

- Product's annual sales
- Future growth projections
- Average power consumption
- Usage pattern (Hours per day and days in a year)
- Diversity factor
- Saving potential

2. Qualitative Parameters

- Test procedure/ standards (National or International): Does it exist?
- Test laboratories, manufacturers, organized/ un organized sector
- Implementing associations/ partners

Parameter		Weight
1.	GHG abatement potential of products	75%
2.	Implementability	25%

PRODUCT PRIORITIZATION SCREEN

RESULT 1: Overall Ranking based on

Rank	Product	Main Category
1	Air Conditioners	Home Appliances & Equipments
2	Commercial Vehicles	Fuel Operated & Transport Products
3	CTVs	Consumer Electronics & External Power Supply Equipment
4	Chillers	Industrial Products
5	Passenger Vehicles	Fuel Operated & Transport Products
6	Diesel Engines	Fuel Operated & Transport Products
7	Motors	Industrial Products
8	Refrigerators	Home Appliances & Equipments



India (2030)

Ranking based only on GHG Abatement potential

Product	GHG Abatement Potential (in Million tonnes of CO ₂ e)	Main Category
Commercial Vehicles	146.6	Fuel Operated & Transport Products
Passenger Vehicles	133.9	Fuel Operated & Transport Products
Refrigerators	92.8	Home Appliances & Equipments
Chillers	72.6	Industrial Products
Commercial Air Conditioners	70.7	Industrial Products
Industrial Air Conditioners	55.5	Fuel Operated & Transport Products
Industrial Motors	51.1	Consumer Electronics & External Power Supply Equipment
Industrial Chillers	49.1	Industrial Products

2015

Product Policy Analysis Tool (PPAT) v2.0

Model Framework

Research and
Data collection



Modeling and
Analysis



Result

MODEL CAPABILITY:

- Results based on Technical and Qualitative Criteria
- Dynamic, flexible and user input driven

All Products possible

Initial Filter – size in Indonesian market, data availability

Products contributing to analysis

Prescreening

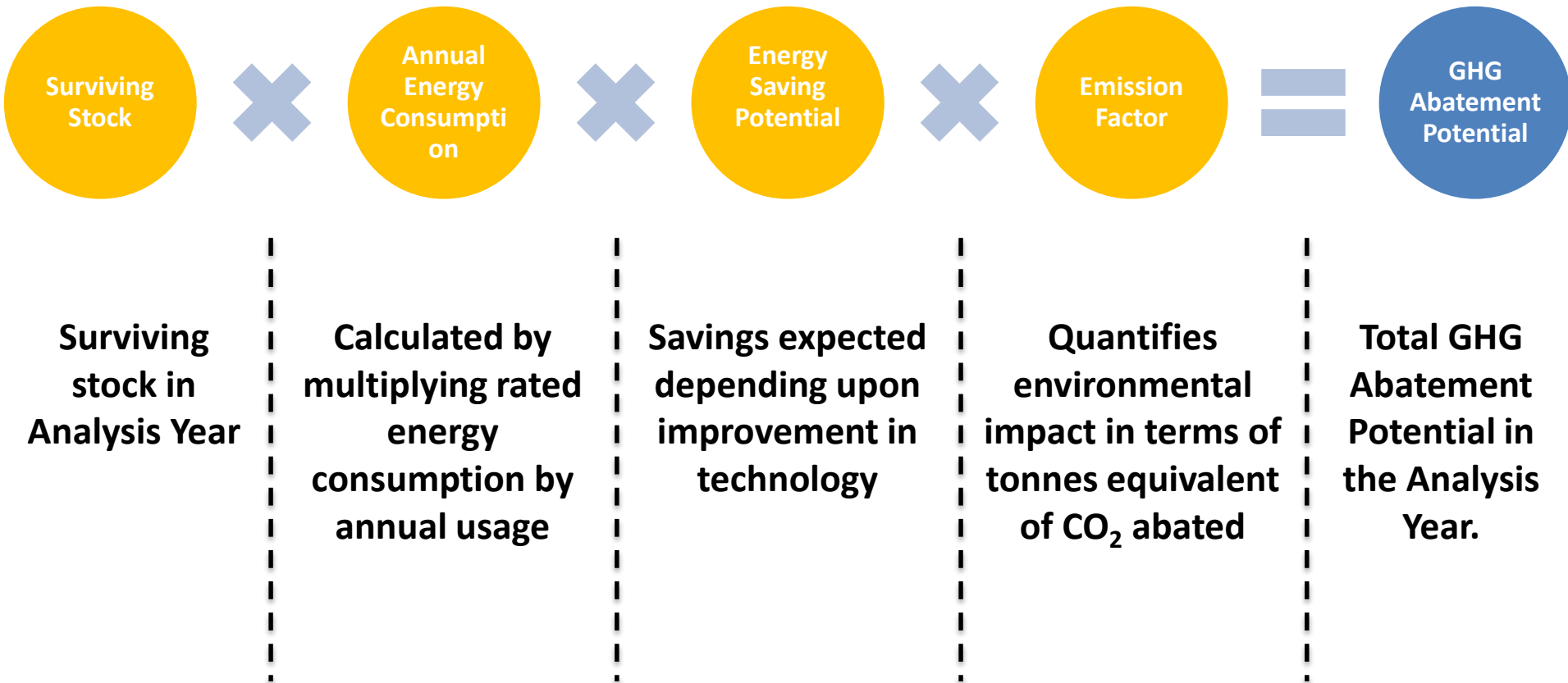
**Prioritization criterion 1.
GHG Abatement Potential**

**Prioritization criterion 2.
Market Implementability**

**Top 10 products on
basis of GHG abatement
potential**

**Top 10 products on basis of
GHG abatement potential
and Market
implementability**

Quantitative Analysis Equation



Key Capabilities

- Data Simulation
- Policy Analysis
- Scenario comparison
- Life cycle analysis
- Visuals and Reports

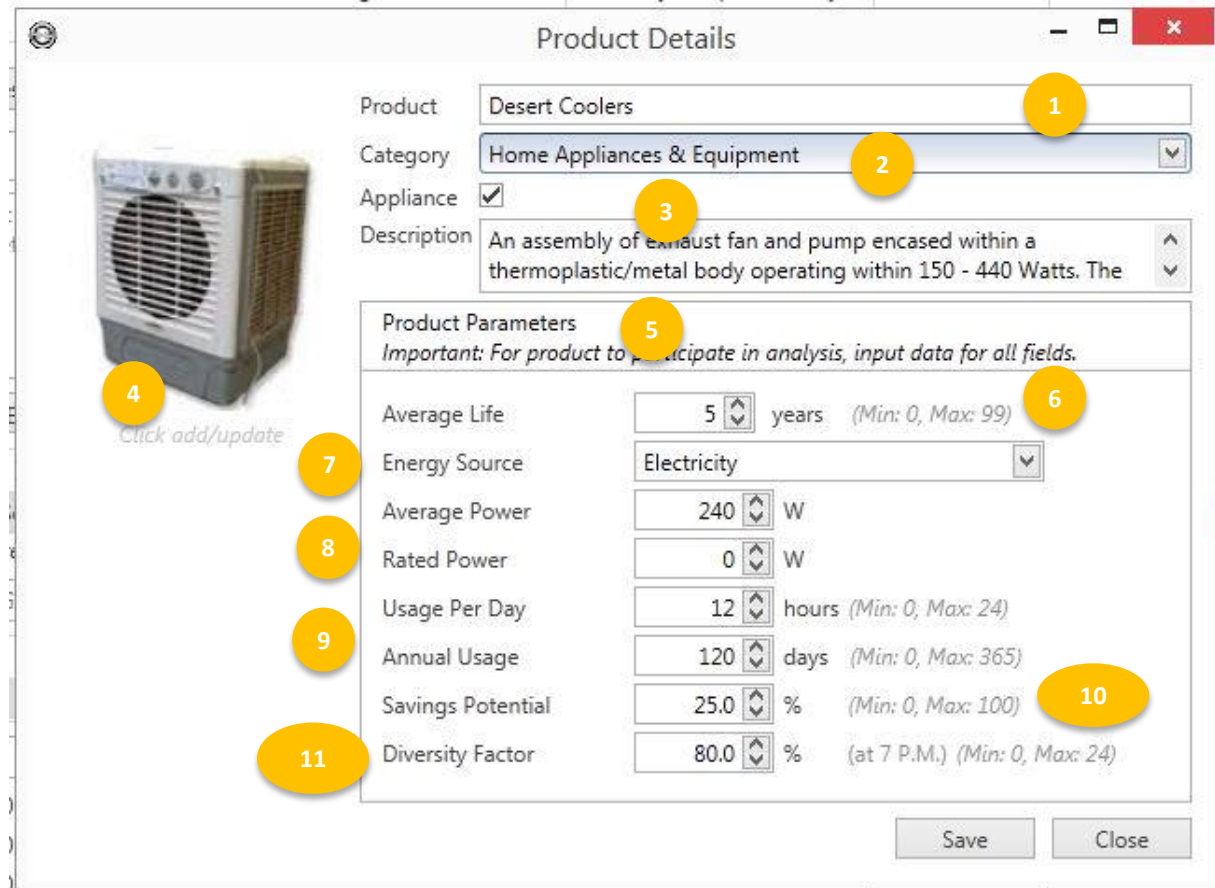


- Data entry and editing- Ability to add, delete and modify data on product, product categories
- Dynamic tool- allows users to edit/add values for most of the parameters i.e., emission factor, data source, growth rate etc.
- Ability to select data from multiple sources such as manufacturing associations, BEE, consumer organisations etc.



Add Product Parameters

1. Assignment of unique Product Name to each product.
2. Product assignment to relevant Category.
3. Toggle to select whether product is an Appliance or not.
4. Facility to add Product Image. List of sources defined.
5. Facility to add Product Parameters that are required for tool to perform analyses. Tool utilizes either Average or Rated rate of energy consumption. In case input for both is provided, tool utilizes Average rate of energy.
6. Reference to useful life of a product after which it either wears down and/or is discarded. Input for Average Annual and daily usage details.
7. Inputs for Average Life.
8. Inputs for Energy Source.
9. Inputs for Average Power.
10. Inputs for Rated Power.
11. Inputs for Usage Per Day.
12. Inputs for Annual Usage.
13. Inputs for Savings Potential.
14. Inputs for Diversity Factor.



Product Details

Product: Desert Coolers 1

Category: Home Appliances & Equipment 2

Appliance: ☒ 3

Description: An assembly of exhaust fan and pump encased within a thermoplastic/metal body operating within 150 - 440 Watts. The 4

Click add/update

Product Parameters 5

Important: For product to participate in analysis, input data for all fields.

Average Life: 5 years (Min: 0, Max: 99) 6

Energy Source: Electricity 7

Average Power: 240 W 8

Rated Power: 0 W 9

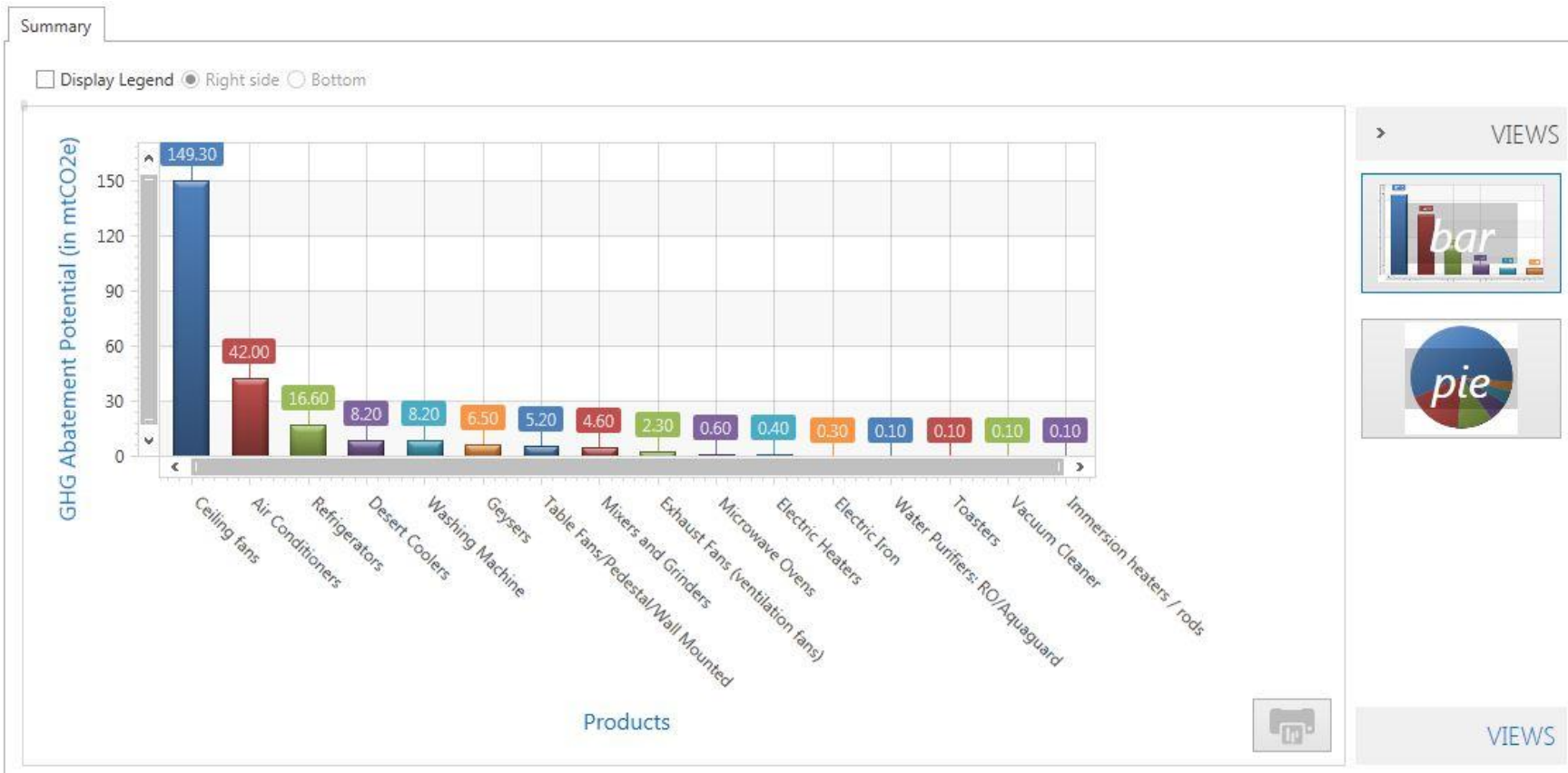
Usage Per Day: 12 hours (Min: 0, Max: 24)

Annual Usage: 120 days (Min: 0, Max: 365)

Savings Potential: 25.0 % (Min: 0, Max: 100) 10

Diversity Factor: 80.0 % (at 7 P.M.) (Min: 0, Max: 24) 11

Save Close



Ranking of products based on energy and GHG savings

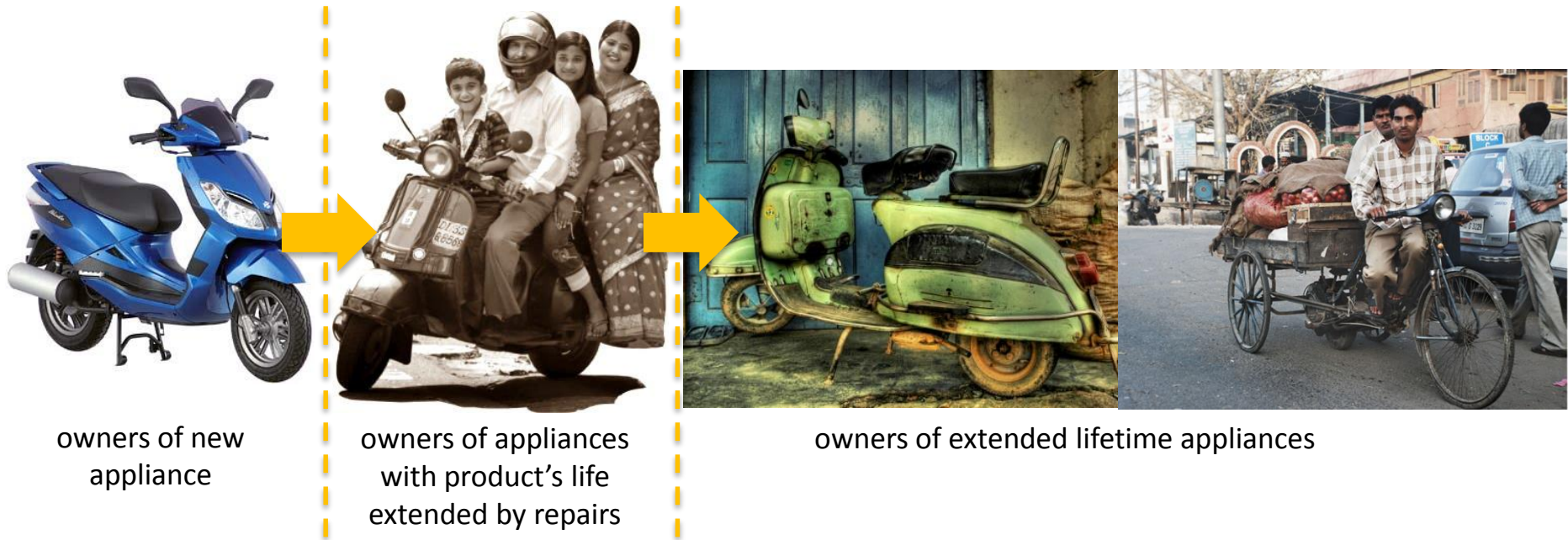
Market Implementability

1. Product list
2. Qualitative parameters
3. Normalized score
4. User assigned weights

Product	Test Procedures/ Standards (weightage: 40%)	Number of Stakeholders (manufacturers) (weightage: 15%)	% Organized sector (weightage: 30%)	Implementing Association / Partner (weightage: 15%)	Score
Water Purifiers: RO/A...	2	3	3	0	0.54
Desert Coolers	4	0	1	0	0.48
Table Fans/Pedestal/...	4	1	2	4	0.74
Exhaust Fans (ventilati...	2	0	1	2	0.35
Washing Machine	4	3	4	4	0.96
Mixers and Grinders	2	2	2	2	0.50
Microwave Ovens	2	4	4	4	0.80
Toasters	2	1	2	4	0.54
Electric Iron	2	1	1	0	0.31
Vacuum Cleaner	2	4	4	4	0.80
Electric Heaters	0	1	1	0	0.11
Immersion heaters / r...	0	0	0	0	0.00
Air Conditioners	4	4	4	4	1.00
Refrigerators	4	4	4	4	1.00
Ceiling fans	4	3	3	4	0.89
Geysers	4	2	3	4	0.85
Music Systems	2	1	2	4	0.54
VCD/DVD Players	2	1	2	4	0.54
Cordless Phones	0	2	2	4	0.38
Inverters	2	1	1	0	0.31
Voltage Stabilizer	2	1	1	0	0.31

Market Implementability Weightage: 50.0 %

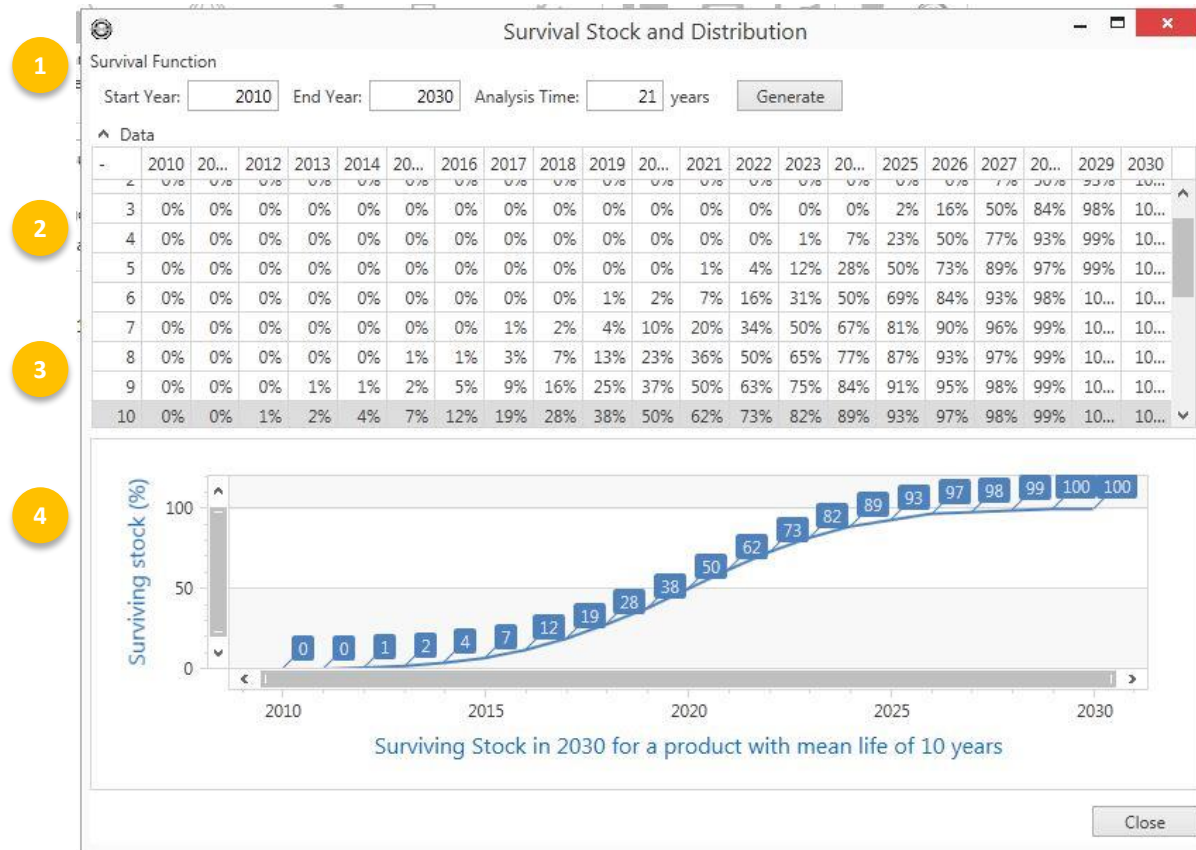
Calculation of surviving stock



- Stock Accounting Model (SAM)
 - Normal distribution

Survival Stock Estimation Module

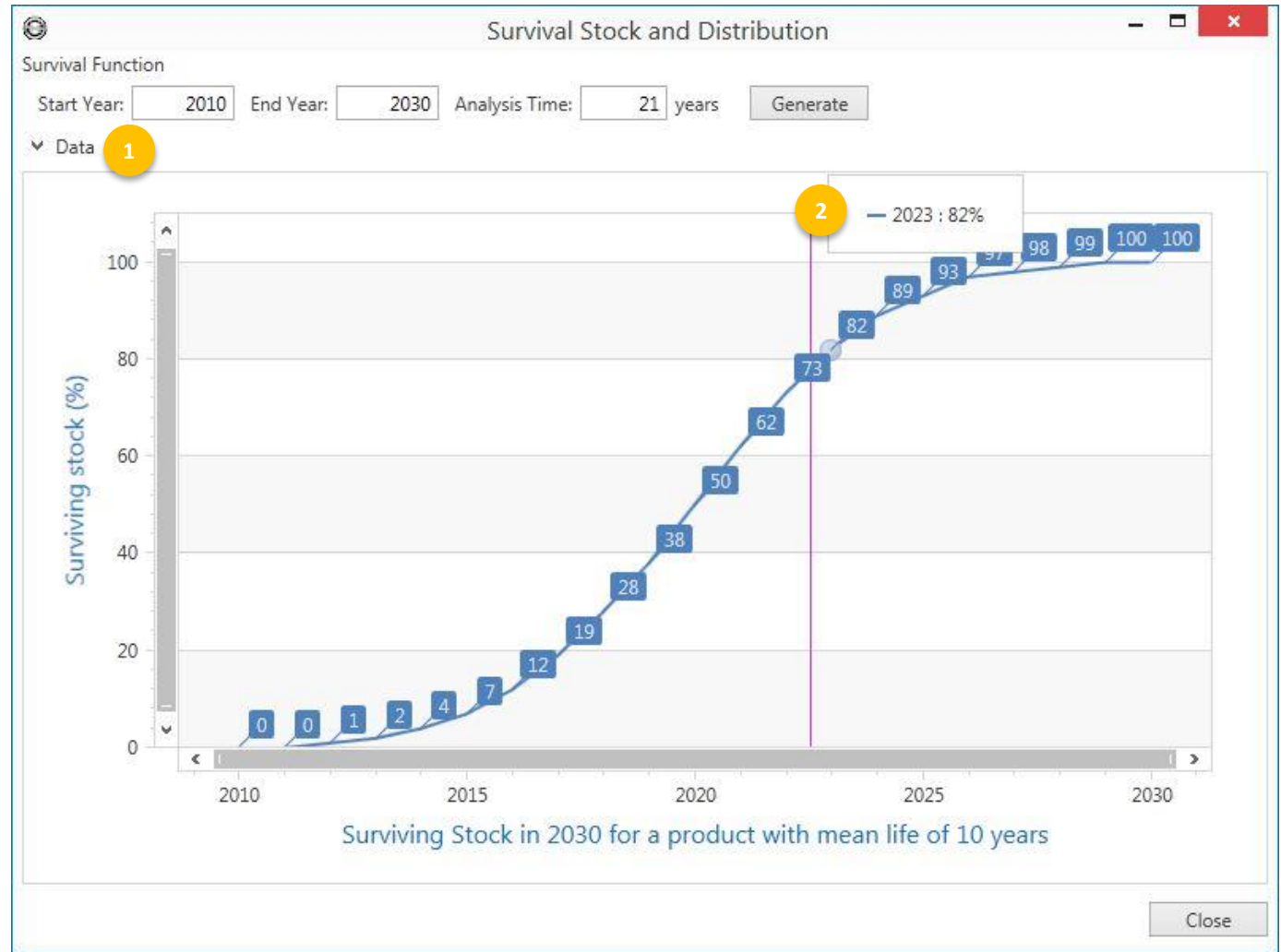
1. Reports analysis time frame used for the stock generation.
2. Population distribution represented in a matrix. The cell $i_{(r,c)}$, identified as intersection of row 'r' and column 'c' signifies surviving population for a product with mean life 'r' in year 'c'. Sum of cells in row 'r' from year c_1 to year c_n reports surviving stock for product with mean life 'r' in year c_n .
3. Graph for highlighted year (10 years).
4. Representation of population distribution for a given mean life in graphical format. The graph represents information only for the selected mean life (or row).



Survival Stock Estimation Module

Forecasting Surviving Stock

1. Expanded graphic view.
2. Data tool tips and threshold marker on mouse over.



- Allows modeling policy scenario and measure the impact of S&L strategies on Market Transformation.
 - MEPS, Comparative, Endorsement

Policy Analysis Wizard

Product

Select Product
Please select product

Recent Policy Analyses

✓ Room AC

Open Remove

Save Save As

Product
Air Conditioners

Description
Domestic space conditioning equipment including split AC's, window units ranging between 0.5 - 3 TR.

Category
Home Appliances & Equipment

Average Power/Capacity (W)
1,740.00

Usage (hours per year)
1,200

Stock in Analysis Year
71,394,882

Cumulative Stock Uptill Analysis Year
359,565,013

Policy Analysis Impact

☒ in Analysis Year 2020

☐ cumulative up till Analysis Year 2020

MEPS Label



Name mepsPolicyAnalysis01

Inputs

Existing Market Range
(Enter range for rate of energy consumption)

Min_{existing} 1,218.0 W

Max_{existing} 2,262.0 W

Market Range after MEPS
(Enter range for rate of energy consumption)

Min_{revised} 1,218.0 W

MEPS 2,112.0 W

Calculate

Savings :-
64,25,132 MWh

Comparative Label



Name comparativePolicyAnalysis01

Inputs

No. of Labels 5 Generate

Label	Savings Percentage
1 Star	5.0
2 Star	10.0
3 Star	15.0
4 Star	20.0
5 Star	25.0

please double click the label to edit values

Calculate

Savings :-
1,86,07,400 MWh

Endorsement Label



Name endorsementPolicyAnalysis01

Inputs

Products Affected (%) 15

Energy Savings Potential (%) 25

Generate Report Calculate

Energy Consumption

Without Savings 25,516,282,896.000 W

With Savings 24,559,422,287.400 W

Savings :-
9,56,861 MWh

MEPS

Comparative

Endorsement

Scenario Comparison

- Analysis of savings from a combination of S&L policy types
- Combination strategies include MEPS-comparative, MEPS-Endorsement, MEPS Comparative endorsement or Comparative endorsement

Policy Analysis Wizard

Product

Select Product
Please select product

Recent Policy Analyses

☒ Room AC

Open Remove

Save Save As

Product
Air Conditioners

Description
Domestic space conditioning equipment including split AC's, window units ranging between 0.5 - 3 TR.

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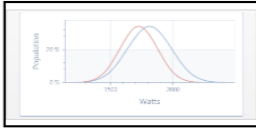
Cumulative Stock Uptill Analysis Year
359,565,013

Policy Analysis Impact

☒ in Analysis Year 2020

☐ cumulative up till Analysis Year 2020

MEPS Label



Name mepsPolicyAnalysis01

Inputs

Existing Market Range
(Enter range for rate of energy consumption)

Minexisting 1,228.0 W

Maxexisting 2,262.0 W

Market Range after MEPS
(Enter range for rate of energy consumption)

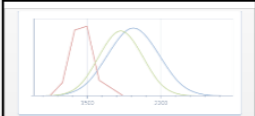
Minrevised 1,218.0 W

MEPS 2,112.0 W

Calculate

Savings :-
64,25,132 MWh

Comparative Label



Name comparativePolicyAnalysis01

Inputs

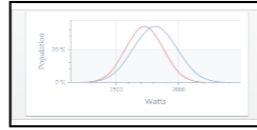
No. of Labels 5 Generate

Label	Savings Percentage
1 Star	5.0
2 Star	10.0
3 Star	15.0
4 Star	20.0
5 Star	25.0

Calculate

Savings :-
2,42,30,489 MWh

MEPS Label



Name mepsPolicyAnalysis01

Inputs

Existing Market Range
(Enter range for rate of energy consumption)

Minexisting 1,228.0 W

Maxexisting 2,262.0 W

Market Range after MEPS
(Enter range for rate of energy consumption)


Minrevised 1,218.0 W

MEPS 2,112.0 W

Calculate

Savings :-
64,25,132 MWh

Endorsement Label



Name endorsementPolicyAnalysis01

Inputs

Products Affected (%) 15

Energy Savings Potential (%) 25

Generate Report Calculate

Energy Consumption

Without Savings 142,646,975,318.604

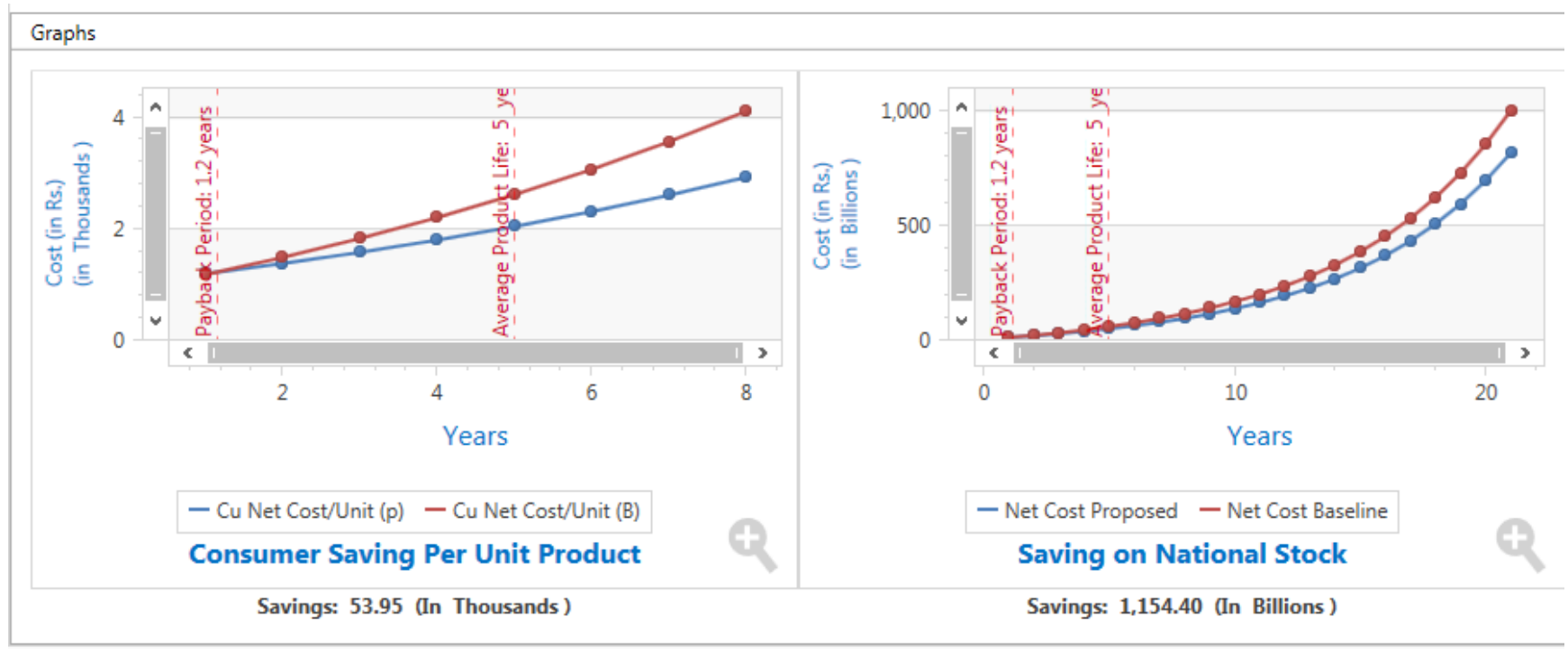
With Savings 137,297,713,744.157

MEPS Comparative Endorsement

Savings :-
1,17,74,394 MWh

Life Cycle Analysis

- Monetary savings and pay back period are calculated over the life of the product
- Calculated for **Consumers** on per unit cost and on **National** stock.



Visuals and Reports

- Data export
- Automated report generation
- Data Visualisation



-

Summary					
Product Rankings					
Product	Ranking		Expected Energy Savings		GHG Abatement Potential
	Within Category ▲	Overall		Units	(in mtCO ₂ e)
▲ Energy Source: Electricity			103,315,352		84.6
Ceiling fans	1	4	53,871,939 MWh		44.2
Air Conditioners	2	6	22,360,877 MWh		18.3
Refrigerators	3	8	9,109,148 MWh		7.5
Washing Machine	4	11	4,543,579 MWh		3.7
Geysers	5	12	3,430,921 MWh		2.8
Microwave Ovens	6	14	295,075 MWh		0.2
Vacuum Cleaner	7	15	53,919 MWh		0.0
Table Fans/Pedestal/Wall...	8	20	2,651,462 MWh		2.2
Water Purifiers: RO/Aquag...	9	34	83,611 MWh		0.1
					84.6 ▼
Products					

Automated Report Generation

Report Functions

Function menu that allows various features like navigation, export, view, etc.



Document Map
Identifies report components in a tree structure.

- Report
 - 1.0.25
 - Home Appliances & Equipment
 - Water Purifiers: RO/Aquaguard
 - Desert Coolers
 - Table Fans/Pedestal/Wall Mounted
 - Exhaust Fans (ventilation fans)
 - Washing Machine
 - Mixers and Grinders
 - Microwave Ovens
 - Electric Iron
 - Electric Heaters
 - Air Conditioners
 - Ceiling fans
 - Geysers
 - Consumer Electronics & External Power Sup
 - Office Equipment
 - Industrial Products
 - Commercial Food Service Equipment
 - Lighting Products
 - Fuel Operated & Transport Products

Report Preview Window
Provides quick view of report for review before export/print.

Product Policy Analysis Tool Report
('1.0.25' Scenario)

September 2013

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Zoom: 100%

Scenario Summary - '1.0.25'

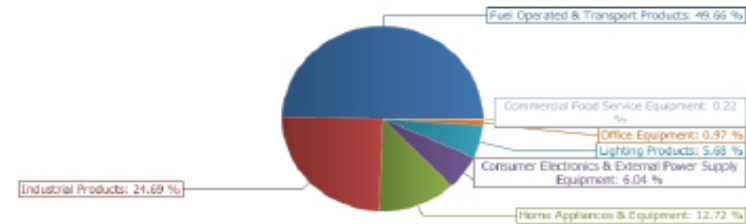
The following section presents the findings of the tool for this Scenario. It highlights the GHG abatement potential for all product categories and their respective percentage contributions towards the GHG abatement potential. Additionally, energy saving for all product categories is divided on the basis of energy source. The Top 10 products and Top 10 appliances based on GHG abatement potential are also highlighted.

Scenario Description

Build 25

Total GHG abatement possible under Scenario '1.0.25'

Category Ranking/Contribution

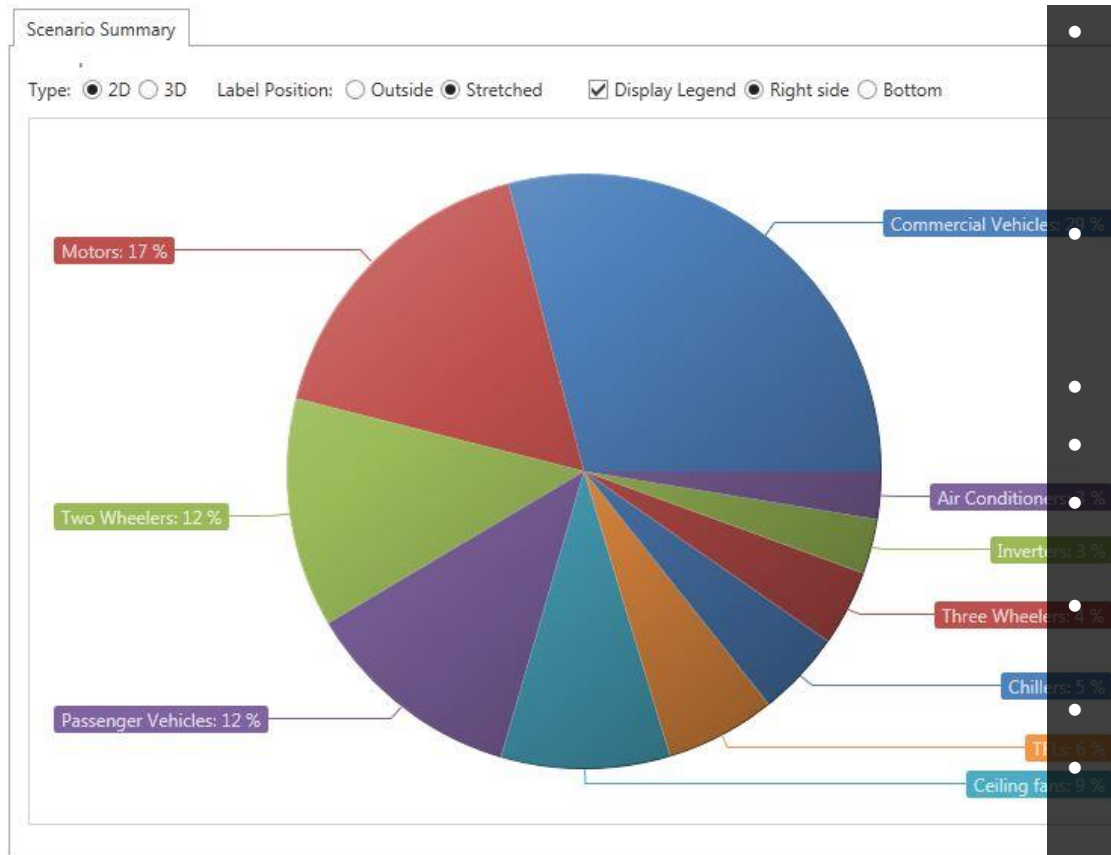


Category	GHG Abatement Potential (in m ³ CO ₂ e)
Fuel Operated & Transport Products	954.9
Industrial Products	474.8
Home Appliances & Equipment	244.6
Consumer Electronics & External Power Supply Equipment	116.2
Lighting Products	109.3
Office Equipment	18.7
Commercial Food Service Equipment	4.3

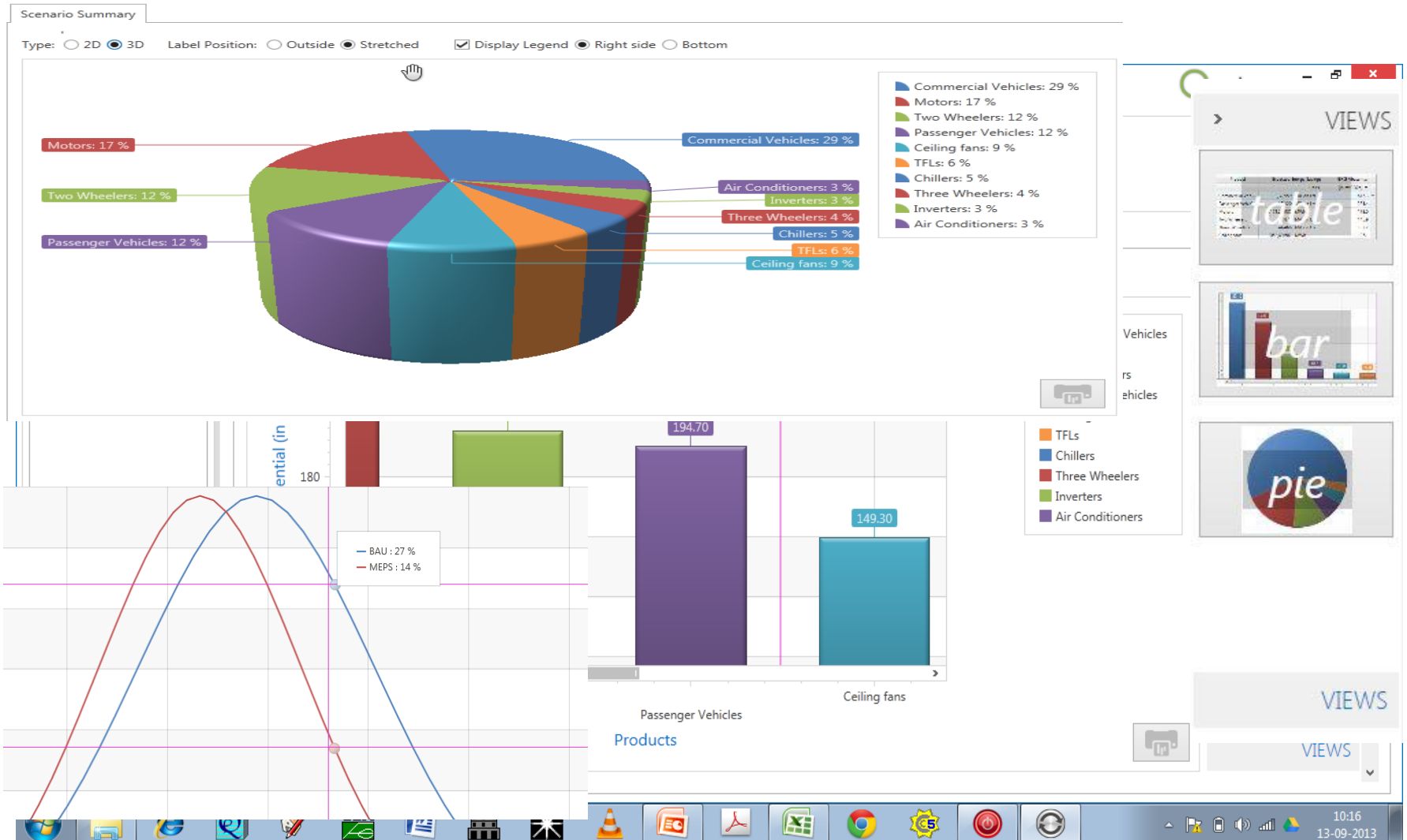
Top 10 Products

1. Reporting for 2 scenarios at a time.
2. Custom page setup
3. Custom print settings
4. Export (as an e-mail, pdf, etc)
5. Selective export
6. Navigation
7. Report encryption
8. Watermark

Data Visualisation



- Graph toggle toolbar
 - Pie Chart
 - Bar Chart
 - Tabular format
- Other graphical display formats
 - Line Chart
 - Scatter with smooth lines
- Legend display toggle
- 2-D/3-D display
- Capability to export views individually.
- ‘Zoom in’, ‘pan’ and ‘View Window maximize’ capability
- Animated visualizations
- Color schema reflecting primary colors



Common Challenges

- Data collection and updation
- Lack of detailed studies for all the product categories that provide/validate the assumptions used in the tool on
 - Usage pattern
 - Average life of products
 - Efficiency degradation
 - Market segmentation
 - Anticipated/available technological upgrades





Thanks!

Eric Gibbs/ Amit Khare
CLASP

egibbs@clasp.ngo

+1 202-662-7288

akhare@clasp.ngo

+1-202-750-5590

www.clasp.org

